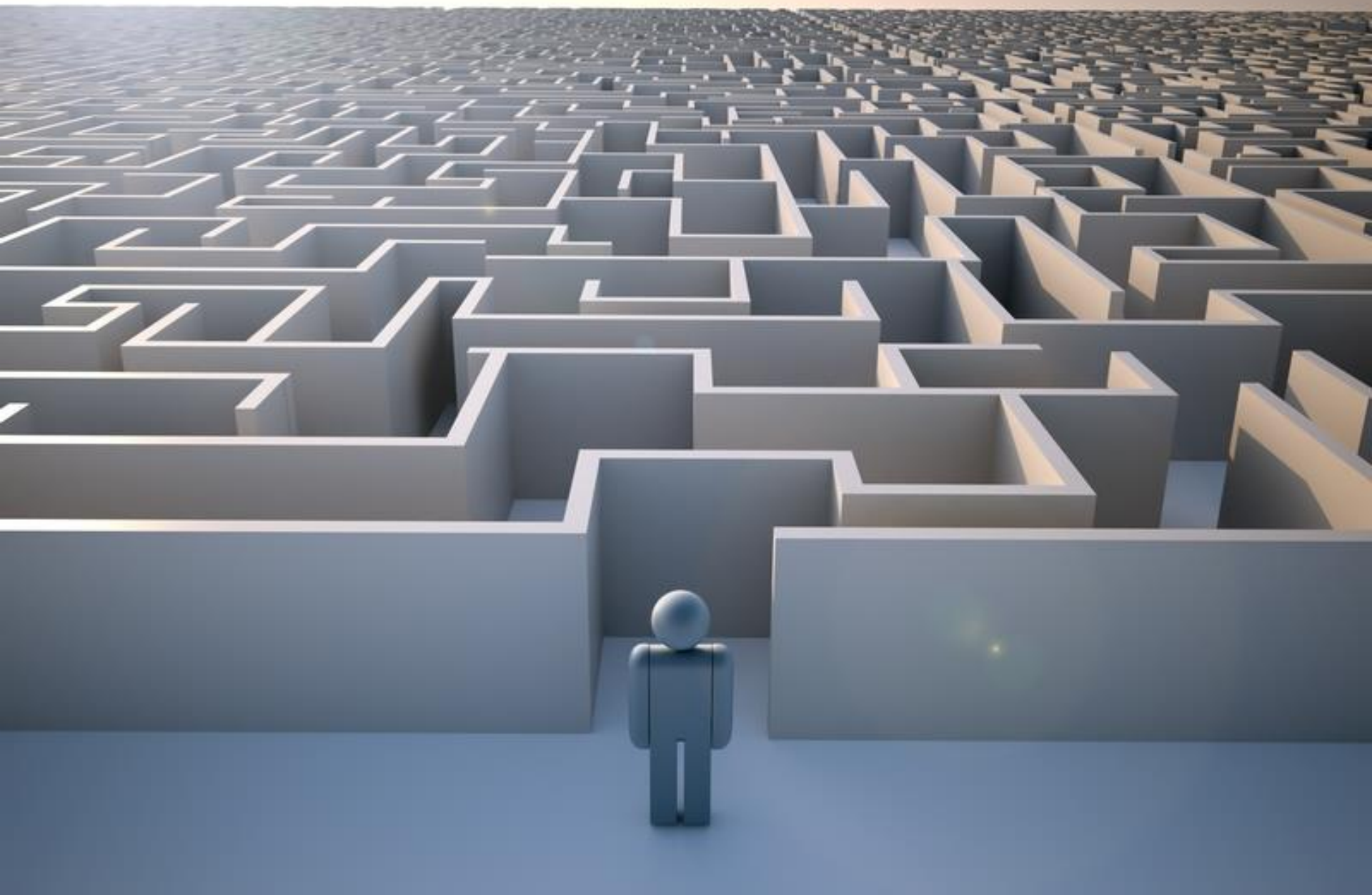
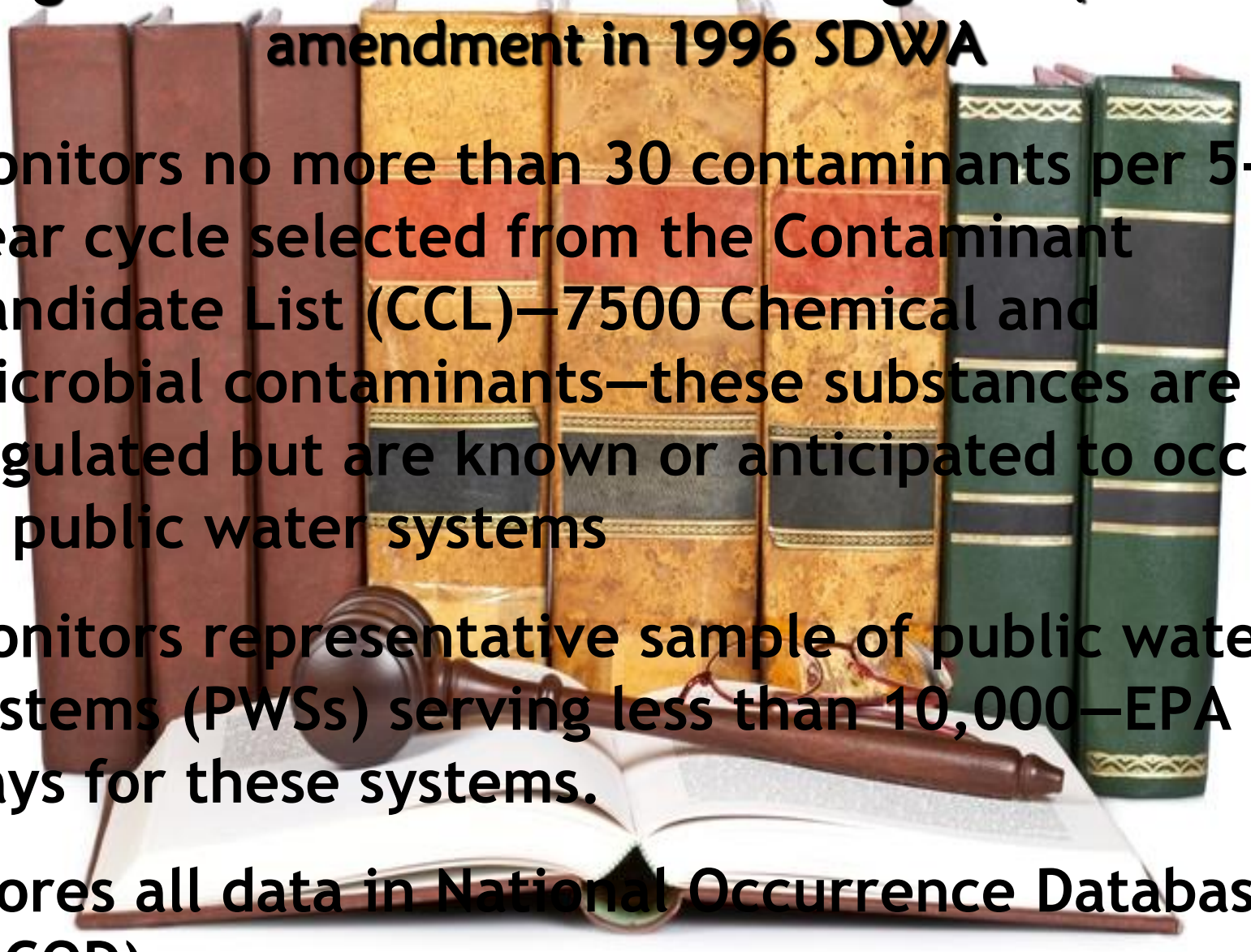
Unregulated Contaminant Monitoring Rule Update



This Presentation

- General information about UCM and why it's done
- History of the program
- How the monitoring program is set up
- UCMR3 Findings through April 2016
- UCMR4 Timeline
- UCMR4 analytes and methodology
- Differences in UCMR4

Unregulated Contaminant Monitoring Rule (UCMR)—amendment in 1996 SDWA



- Monitors no more than 30 contaminants per 5-year cycle selected from the Contaminant Candidate List (CCL)—7500 Chemical and microbial contaminants—these substances are not regulated but are known or anticipated to occur in public water systems
- Monitors representative sample of public water systems (PWSs) serving less than 10,000—EPA pays for these systems.
- Stores all data in National Occurrence Database (NCOD)

History

- UCMR 3 (2012-2016) -Regulation monitoring for 30 contaminants (28 chemicals and 2 viruses) from 2012-2015.
- UCMR 2 (2007-2011) – UCMR 2 monitoring was managed by EPA and established a new set of 25 chemical contaminants sampled during 2008-2010.
- UCMR 1 (2001-2005) – The SDWA Amendments of 1996 redesigned the UCM program to incorporate a tiered monitoring approach and required monitoring for 25 contaminants (24 chemicals and one bacterial genus) during 2001-2003.
- UCM-State Rounds 1 & 2 (1988-1997) – State drinking water programs managed the original program and required public water systems (PWSs) serving more than 500 people to monitor contaminants.

http://water.epa.gov/lawsregs/rulesregs/sdwa/ucmr/

UCMR Program Basics
Tiered Monitoring

- 3 Tiers of Potential Monitoring
  - Assessment Monitoring (AM) - List 1—commonly used analytical techniques
  - Screening Survey (SS) - List 2—more recently developed techniques
  - Pre-screen Testing (PST) - List 3—new or specialized techniques

UCMR 4—Only Assessment Monitoring

April 2016 UCMR 3 Data Summary for Chemical Contaminants

Contaminant	MRL (µg/L)	Reference Concentration (µg/L)	Total number of results	Number of results ≥MRL	Number of results >Reference Concentration	% of total results >Reference Concentration	Total number of PWSs with results	Number of PWSs with results ≥MRL	Number of PWSs with results >Reference Concentration	% of PWSs with results >Reference Concentration
1,2,3-trichloropropane	0.03	0.0004 / 0.04[1]	35,931	249	249 / 191[1]	0.7% / 0.5%[1]	4,850	64	64 / 53[1]	1.3% / 1.1%[1]
1,3-butadiene	0.1	0.0103 / 1.03[1]	35,931	1	1 / 0[1]	0.003% / 0%[1]	4,850	1	1 / 0[1]	0.02% / 0%[1]
Chloromethane	0.2	2.69 / 269[1]	35,929	273	18 / 0[1]	0.05% / 0%[1]	4,850	134	7 / 0[1]	0.1% / 0%[1]
1,1-dichloroethane	0.03	6.14 / 614[1]	35,929	821	1 / 0[1]	0.003% / 0%[1]	4,850	239	1 / 0[1]	0.02% / 0%[1]
Bromomethane	0.2	140	35,930	114	0	0%	4,850	49	0	0%
HCFC-22	0.08	NA	35,931	813	--	--	4,850	279	--	--
Halon 1011	0.06	90	35,930	632	0	0%	4,850	302	0	0%
1,4-dioxane	0.07	0.35 / 35[1]	35,856	4,145	1,069 / 0[1]	3% / 0%[1]	4,849	1,062	336/ 0[1]	7% / 0%[1]
Vanadium	0.2	21	61,483	36,974	1,664	2.7%	4,862	3,579	161	3.3%
Molybdenum	1	40	61,490	24,950	145	0.2%	4,862	2,510	38	0.8%
Cobalt	1	70	61,484	822	3	0.005%	4,862	241	3	0.06%
Strontium	0.3	1,500	61,419	61,271	1,698	2.8%	4,862	4,862	278	5.7%
Chromium	0.2	100	61,414	31,159	1	0.002%	4,862	3,602	1	0.02%
Chromium-6	0.03	NA	61,392	46,411	--	--	4,862	4,343	--	--
Chlorate	20	210	61,298	33,733	9,547	15.6%	4,852	3,344	1,850	38.1%
PFOS	0.04	0.07	36,149	285	119	0.3%	4,864	94	46	0.9%
PFOA	0.02	0.07	36,148	354	31	0.09%	4,864	108	13	0.3%
PFNA	0.02	NA	36,150	19	--	--	4,864	14	--	--
PFHxS	0.03	NA	36,149	204	--	--	4,864	55	--	--
PFHpA	0.01	NA	36,150	231	--	--	4,864	84	--	--
PFBS	0.09	NA	36,150	18	--	--	4,864	8	--	--
17β-estradiol	0.0004	0.0009 / 0.09[1]	11,322	3	1 / 0[1]	0.009% / 0%[1]	1,186	1	1 / 0[1]	0.08% / 0%[1]
17α-ethynylestradiol	0.0009	0.035	11,323	4	0	0%	1,186	4	0	0%
Estriol	0.0008	0.35	11,323	2	0	0%	1,186	2	0	0%
Equilin	0.004	0.35	11,323	0	0	0%	1,186	0	0	0%
Estrone	0.002	0.35	11,323	0	0	0%	1,186	0	0	0%
Testosterone	0.0001	NA	11,322	65	--	--	1,186	58	--	--
4-androstene-3,17-dione	0.0003	NA	11,323	95	--	--	1,186	73	--	--

[1]Where two reference concentrations are listed, the first number is associated with a 10^{-6} cancer risk; the second number a 10^{-4} cancer risk.
Where two results are presented the first number is associated with the first reference concentration; the second number is associated with the second reference concentration.

Oxyhalide Anion by method 300.1

http://www.purate.com/common/PurateBrochure.pdf

chlorate

Method 537

Perfluorooctane sulfonate (PFOS)

Perfluorooctanoic acid (PFOA)

Perfluorononanoic acid (PFNA)

Perfluorohexane sulfonic acid (PFHxS)

Perfluoroheptanoic acid (PFHpA)

Perfluorobutane sulfonic acid (PFBS)

To provide Americans, including the most sensitive populations, with a margin of protection from a life-time of exposure to PFOA and PFOS from drinking water, EPA established the health advisory levels at 70 parts per trillion. When both PFOA and PFOS are found in drinking water, the combined concentrations of PFOA and PFOS should be compared with the 70 parts per trillion health advisory level. This health advisory level offers a margin of protection for all Americans throughout their life from adverse health effects resulting from exposure to PFOA and PFOS in drinking water.[1]

As of April 2016, there were 7 PWS in Alabama that exceeded this Health Advisory/Reference Level from EPA Occurrence data.[2]

1 https://www.epa.gov/sites/production/files/2016-06/documents/drinkingwaterhealthadvisories_pfoa_pfos_updated_5.31.16.pdf
2 EPA Occurrence Data

UCMR4 Schedule

- June 25, 2014 UCMR 4 Stakeholder Meeting and Webinar
- July 2015 Published UCMR 4 Proposal
- July 2015 through October 2015 Public Comment
- Final Rule Drafted beginning October 2015 ending in 2016
- December 2016 Final Rule Published
- 2017 Implementation of Rule—Laboratory Certifications
- UCMR 4 monitoring in Jan. 2018

http://www.amwa.net/sites/default/files/UCMR4StakeholderPresentations.pdf

2017	2018	2019	2020	2021
After proposed rule publication: EPA laboratory approval program begins After final rule publication: EPA/state primacy authorities (1) develop SMPs (including the nationally representative sample); and (2) inform PWSs/ establish monitoring plans Deadline for water system to make a change: Nov. 30, 2017	Assessment Monitoring List 1 Contaminants All large systems serving more than 10,000 people analyze for cyanotoxins (Surface/GUDI) and 20 additional chemicals(Surface/GW/GUDI); 800 small systems serving 10,000 or fewer people analyze for cyanotoxins; 800 small systems serving 10,000 or fewer people analyze for the 20 additional chemicals. EPA pays for smaller systems sampling and analysis.			Complete reporting and analysis of data

UCMR 4 Candidates

Metals by Method 200.8 (ICP-MS)

Contaminant	CAS Registry Number	Minimum Reporting Level	Sampling Points	Analytical Methods
Germanium	7440-56-4	0.3 µg/L	EPTDS	EPA 200.8, ASTM D5673-10, SM 3125
Manganese	7439-96-5	0.4 µg/L	EPTDS	EPA 200.8, ASTM D5673-10, SM 3125

http://www.amwa.net/sites/default/files/UCMR4StakeholderPresentations.pdf

UCMR 4 Candidates

Eight Pesticides and One Pesticide Manufacturing Byproduct

Contaminant	CAS Registry Number	Minimum Reporting Level	Sampling Points[2]	Analytical Methods
alpha-hexachlorocyclohexane	319-84-6	0.01 µg/L	EPTDS	EPA 525.3
Chlorpyrifos	2921-88-2	0.03 µg/L	EPTDS	EPA 525.3
Dimethipin	55290-64-7	0.2 µg/L	EPTDS	EPA 525.3
Ethoprop	13194-48-4	0.03 µg/L	EPTDS	EPA 525.3
Oxyfluorfen	42874-03-3	0.05 µg/L	EPTDS	EPA 525.3
Profenofos	41198-08-7	0.3 µg/L	EPTDS	EPA 525.3
tebuconazole	107534-96-3	0.2 µg/L	EPTDS	EPA 525.3
total permethrin (cis- & trans-)	52645-53-1	0.04 µg/L	EPTDS	EPA 525.3
Tribufos	78-48-8	0.07 µg/L	EPTDS	EPA 525.3

http://www.amwa.net/sites/default/files/UCMR4StakeholderPresentations.pdf

UCMR 4 Candidates

Semi-Volatile Organic Compounds by Method 530 (GC-MS)

Contaminant	CAS Registry Number	Minimum Reporting Level	Sampling Points	Analytical Methods
butylated hydroxyanisole	25013-16-5	0.03 µg/L	EPTDS	EPA 530
o-toluidine	95-53-4	0.007 µg/L	EPTDS	EPA 530
Quinoline	91-22-5	0.02 µg/L	EPTDS	EPA 530

http://www.amwa.net/sites/default/files/UCMR4StakeholderPresentations.pdf

UCMR 4 Candidates

Alcohols by method 541 (GC/MS)

Contaminant	CAS Registry Number	Minimum Reporting Level	Sampling Points	Analytical Methods
1-butanol	71-36-3	2.0 µg/L	EPTDS	EPA 541
2-methoxyethanol	109-86-4	0.4 µg/L	EPTDS	EPA 541
2-propen-1-ol	107-18-6	0.5 µg/L	EPTDS	EPA 541

http://www.amwa.net/sites/default/files/UCMR4StakeholderPresentations.pdf

Three Brominated Haloacetic Acid (HAA) Groups-Distribution Only-No Entry points

Contaminant	CAS Registry Number	Minimum Reporting Level	Sampling Points	Analytical Methods
HAA5	N/A	N/A	Stage 2 DBPR	EPA 552.3 or EPA 557
HAA6BrBr	N/A	N/A	Stage 2 DBPR	EPA 552.3 or EPA 557
HAA9	N/A	N/A	Stage 2 DBPR	EPA 552.3 or EPA 557

http://www.amwa.net/sites/default/files/UCMR4StakeholderPresentations.pdf

Three Brominated Haloacetic Acid (HAA) Groups

HAA5	HAA6Br	HAA9
Dibromoacetic acid	Dibromoacetic acid	Dibromoacetic acid
Dichloroacetic acid		Dichloroacetic acid
Monobromoacetic acid	Monobromoacetic acid	Monobromoacetic acid
Monochloroacetic acid		Monochloroacetic acid
Trichloroacetic acid		Trichloroacetic acid
	Bromochloroacetic acid	Bromoacetic acid
	Bromodichloroacetic acid	Bromodichloroacetic acid
	Chlorodibromoacetic acid	Chlorodibromoacetic acid
	Tribromacetic acid	Tribromoacetic acid

Indicators: Source Water (Raw)

Parameter	CAS Registry Number	Minimum Reporting Level	Analytical Methods
Total Organic Carbon (TOC)	N/A	N/A	SM 5310 B, SM 5310 C, SM 5310 D (21st edition), or SM 5310 B-00, SM 5310 C-00, SM 5310 D-00 (SM Online), EPA Method 415.3 (Rev. 1.1 or 1.2)
Bromide	N/A	N/A	EPA Methods 300.0 (Rev. 2.1), 300.1 (Rev. 1.0), 317.0 (Rev. 2.0), 326.0 (Rev. 1.0) or ASTM D 6581-12

Ten Cyanotoxin Chemical Contaminants:

Contaminant	CAS Registry Number	Minimum Reporting Level	Sampling Points	Analytical Methods
total microcystin	N/A	0.3 µg/L	EPTDS	ELISA
microcystin-LA	96180-79-9	0.008 µg/L	EPTDS	EPA 544
microcystin-LF	154037-70-4	0.006 µg/L	EPTDS	EPA 544
microcystin-LR	101043-37-2	0.02 µg/L	EPTDS	EPA 544
microcystin-LY	123304-10-9	0.009 µg/L	EPTDS	EPA 544

ELISA= enzyme-linked immunosorbent assay (screening EPA method 546)

Ten Cyanotoxin Chemical Contaminants --continued

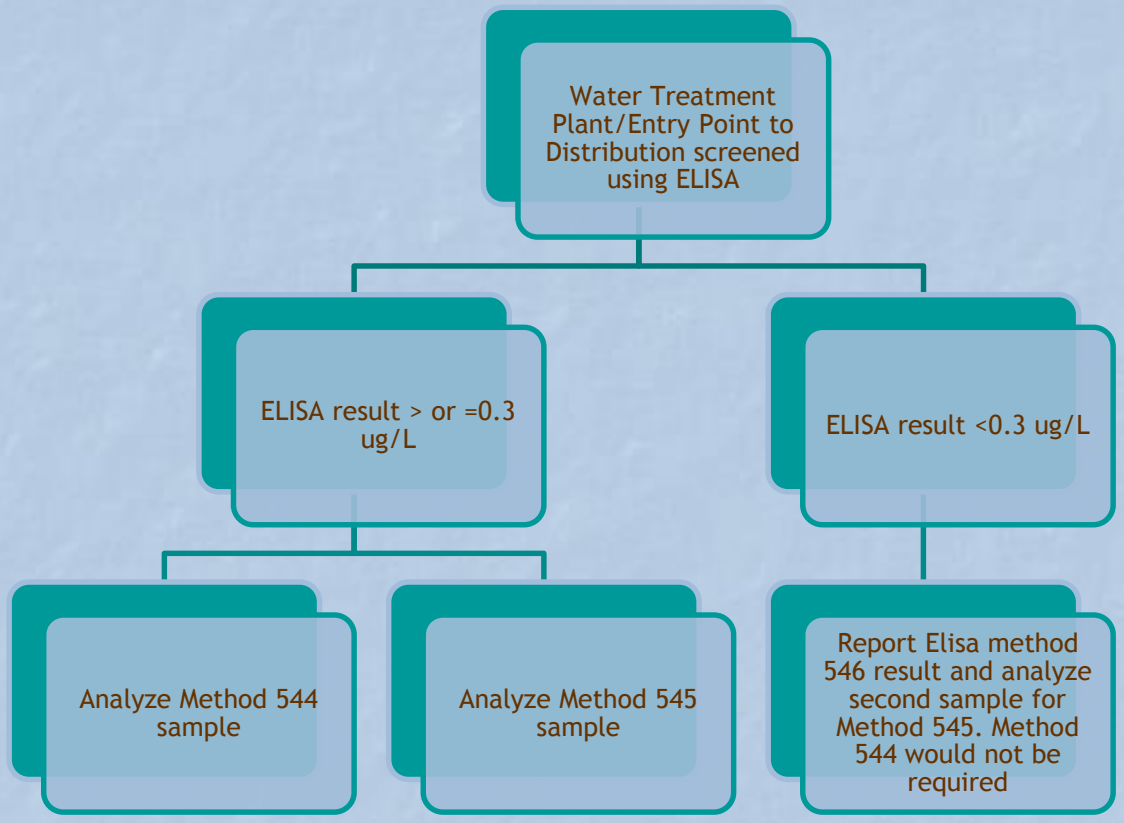
Contaminant	CAS Registry Number	Minimum Reporting Level	Sampling Points	Analytical Methods
microcystin-RR	111755-37-4	0.006 µg/L	EPTDS	EPA 544
microcystin-YR	101064-48-6	0.02 µg/L	EPTDS	EPA 544
Nodularin	118399-22-7	0.005 µg/L	EPTDS	EPA 544
anatoxin-a	64285-06-9	0.03 µg/L	EPTDS	EPA 545
cylindrospermopsin	143545-90-8	0.09 µg/L	EPTDS	EPA 545

Microcystin Phased Sample Analysis

Three samples are collected at Entry point to Distribution. This is finished surface water or finished GUDI.

Screen first samples using ELISA—EPA method 546

Report ELISA result if <0.3ug/L and analyze second sample for method 545. If ELISA results is > or = to 0.3ug/L, the two additional samples are analyzed by EPA methods 544 and 545.



UCMR4 Timing of Monitoring:

Groundwater

- Monitor the 20 additional analytes twice per year 5-7 months apart
- No cyanotoxin monitoring

Surface water or GUDI

- Monitor the 20 additional analytes 4 consecutive quarters. Example: Jan, April, July and Oct..
- Cyanotoxins: Twice per month, two weeks apart for 4 consecutive months (total of 8 sampling events) March through November

EPA Contacts

UCMR Sampling Coordinator:

Contractor: 800-949-1581

UCMR_sampling_coordinator@epa.gov

To upgrade current Central Data Exchange (CDX) to access Safe Drinking Water Accession and Review System (SDWARS):

HELPDESK@EPACDX.NET or call 888-890-1995

www.epa.gov type UCMR 4

Remember that all passwords are purged every 90 days. At that time they must be upgraded to access SDWARS.

Getting Started

1. Log in to CDX UCMR 4 (https://cdx.epa.gov/)

2. Select SDWARS4 and accept notification letter

3. Add official and technical contacts

4. Add inventory (download UCMR3)

5. Review/edit inventory

6. Review sampling schedule

7. Add zip codes

8. Nominate user for your PWS (optional)